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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,374	02/24/2004	Brent L. Bristol	H0005830-1180	3396

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EXAMINER

EDGAR, RICHARD A

ART UNIT PAPER NUMBER

3745

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/786,374

Applicant(s)

BRISTOL ET AL.

Examiner

Richard Edgar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2004 under 37C.F.R. §1.53(b).  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,2,9-12,19-21,28 and 29 is/are rejected.  
7) ☒ Claim(s) 3-8,13-18 and 22-27 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/24/2005.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

The drawings are objected to because:

The reference character "F<sub>e</sub>" in Figs. 3 and 4 should be --F<sub>p</sub> --.

Figs. 5A and 5B are improperly numbered pursuant to 37 CFR §1.84(u)(1). Note the figures are not partial views. The views should be renumbered as FIG. 6 and FIG. 7, respectively. Amendments to the specification including the BRIEF DESCRIPTION OF THE DRAWINGS and DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT should be correspondingly amended.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "194" has been used in Fig. 5 to designate both as stop protrusion and a part of the valve seat 180.

Also, "192" was used in Fig. 3 to represent the clearance, whereas "192" is used in Fig. 5 to represent a portion of the valve seat 180.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 196 (see Fig. 5A). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

The disclosure is objected to because of the following informalities:

In paragraph 0020, line 7, "the check valve" should be --The check valve--.

In paragraph 0030, line 4, "180a" should be --200--.

In paragraph 0031, line 16, " $(P_{\text{gearbox}} - P_{\text{starter}})$ " should be --  $(P_G - P_S)$  --.

In paragraph 0033, line 8, "177" should be -- 182 --.

Appropriate correction is required.

### *Claim Objections*

Claims 1, 11 and 21, 24-26 are objected to because of the following informalities:

In claim 1, line 6, "generative" should be -- generating --.

In claim 11, lines 13-14, "the gearbox assembly and the starter housing" should be -- a gearbox assembly and a starter housing --.

In claim 21, lines 17-18, "the gearbox assembly and the starter housing" should be -- a gearbox assembly and a starter housing --.

Claims 24-26 should depend from claim 23.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 11-12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,681,579 (Lane et al. hereinafter) in view of United States Patent No. 1,897,492 (Ledoux hereinafter).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference

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under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2)

Lane et al. teach an air turbine starter comprising a starter housing 10 adapted to couple to a gearbox assembly C, the starter housing including an opening configured to provide fluid communication between the gearbox assembly and the starter housing, wherein at least a portion of the gearbox assembly is at a pressure greater than a pressure in the starter housing, thereby generating a pressure force therebetween; and a check valve assembly 100 is disposed within the opening.

Lane et al. do not teach the check valve closing in response to buoyant forces.

Ledoux show in Fig. 2, a check valve assembly comprising: a valve body 9d having an inlet port, an outlet port, and a flow passage therebetween; a valve seat 9a adjacent the valve body and having an opening 9b therethrough, the valve seat opening in fluid communication with the valve body flow passage; and a valve element 9d disposed between the valve seat 9a and the valve body 9d, the valve element capable of being acted upon by a gravitational force, a viscous force of the fluid to be communicated through the flow passage, a buoyancy force of the valve element, and the pressure force of the valve element, the valve element configured to translate axially to a closed position when the inlet port pressure is greater than the outlet port pressure, and the weight force of the valve element 9d is less than the buoyant, pressure and

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viscous drag of the fluid to be communicated through the flow passage 9b (see page 2, lines 20-43).

The valve body 9d comprises a backing plate 9c comprising a cage extending across the flow passage including angled protrusions extending axially from at least one portion of the cage configured to selectively contact the valve element 9d (see shape of 9c in Fig. 2).

The viscous fluid force (i.e. drag force) acts in a direction opposite to the fluid pressure force, contrary to that shown in Applicants' figures, as is well known to those having ordinary skill in the art. Also, noted is that there is no drag force when the valve is statically constrained in the closed position.

Since Lane et al. teach a check valve for an air turbine starter, and Ledoux teaches a check valve for controlling fluid, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the valve taught by Ledoux as the check valve taught in Lane et al. for the purpose of minimizing the flow of lubricant to the starter housing from the gearbox assembly when the gearbox assembly pressure is greater than the starter housing pressure.

Claims 9-10, 19-20 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,681,579 (Lane et al. hereinafter) in view of United States Patent No. 1,897,492 (Ledoux hereinafter) as applied to claims 1, 11, and 21, respectively above, and further in view of United States Patent No. 4,986,310 (Bailey et al. hereinafter).

The applied Lane et al. reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the Lane et al. reference, it constitutes prior

art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the Lane et al. reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the Lane et al. reference, prior to the effective U.S. filing date of the Lane et al. reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and Lane et al. reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the Lane et al. reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The modified Lane et al. shows a valve comprising a valve element and a valve seat, but neither the Lane et al. reference nor the Ledoux reference teach or disclose the valve seat comprising an elastomeric material in contact with the valve element.

Bailey et al. teach an elastomeric valve seat 20 having an elastomeric portion 36 thereon for the purpose of sealing the valve element 48 to the valve seat 20.

Since the modified Lane et al. utilizes a valve element to valve seat seal, and Bailey et al. expressly teach to use an elastomeric valve seat for a check valve, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the valve seat 9a of Ledoux from an elastomeric material, as taught by Bailey et al. for the purpose of sealing the valve element to the valve seat.



***Allowable Subject Matter***

Claims 3-8, 13-18 and 22-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 3, 13 and 22 require the protrusion to be adjustable, and Ledoux only disclose a rigid, angled protrusion with no expectation of success in using an adjustable protrusion.

Claims 4-7, 14-17, 23-26 each require the valve element to comprise a shell. Ledoux only disclose a buoyant ball with a mass 9e on the outside of the ball, and not if the ball is hollow, thereby creating a shell. One having ordinary skill in the art would not have been motivated to alter the ball of Ledoux, absent Applicants' disclosure, since there is no motivation for providing a ball with a shell in the cited references.

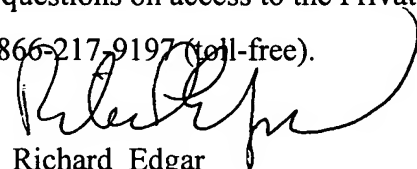
Claims 8, 18 and 27 require the valve element density to be greater than the fluid communicated between the gearbox assembly and the start housing. Ledoux teaches away from this requirement since Ledoux teaches a buoyant ball.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (571) 272-4816. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7 am- 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Edgar  
Examiner  
Art Unit 3745

RE